How to Buy a Water-Saving Replacement Urinal

Energy Efficiency and Renewable Energy
Federal Energy Management Program

Why Agencies Should Buy Efficient Products

- *Executive Order 13123 and FAR section 23.704 direct agencies to purchase products in the upper 25% of energy efficiency, including all models that qualify for the EPA/DOE* ENERGY STAR® *product labeling program.*
- *Agencies that use these guidelines to buy efficient products can realize substantial operating cost savings and help prevent pollution.*
- *As the world's largest consumer, the federal government can help "pull" the entire U.S. market towards greater energy and water efficiency, while saving taxpayer dollars.*

Federal Supply Sources:

- Defense Logistics Agency (DLA)
  Phone: (800) DLA-2852 or (215) 737-8249
  DSN 444-8249 (Dan DiLossi)
  dscp103.dscp.dla.mil/gi/general/pgplum.htm
- General Services Administration (GSA)
  Phone: (817) 978-8640

For More Information:

- DOE's Federal Energy Management Program (FEMP) Help Desk and World Wide Web site have up-to-date information on energy-efficient federal procurement, including the latest versions of these recommendations.
  Phone: (800) 363-3732
  www.eren.doe.gov/femp/procurement
- American Water Works Association "WaterWiser" is a good resource for water conservation and efficiency information.
  Phone: (800) 559-9855
  www.waterwiser.org
- California Energy Commission (CEC) has a list of certified plumbing fixtures.
  Phone: (916) 654-5106
  ftp://energy.ca.gov/pub/efftech/appliance
- *Home Energy* magazine provides water conservation tips.
  Phone: (510) 524-5405
  www.homeenergy.org
- *Consumer Reports* rates plumbing fixtures.
  www.consumerreports.org
- Contact your local water utility for details about local water conservation programs and incentives.
- Lawrence Berkeley National Laboratory provided supporting analysis for this recommendation.
  Phone: (202) 646-7950

Efficiency Recommendation

Product Type	Recommended Flush Rate[a]	Best Available Flush Rate
Urinal	1.0 gallons or less	0.0 gallons

a) Based on ASME test procedure A112.19.6-1990

Definition

The Recommended Flush Rate is exactly that required by the Energy Policy Act of 1992. This Recommendation is issued for the purpose of promoting early replacement.

Where to Find Water-Saving Replacement Urinals

The federal supply sources for urinals are the Defense Logistics Agency (DLA) and, for waterless models, the General Services Administration (GSA). All urinals for sale through commercial sources should also comply with the recommended level, since any urinal manufactured for use in the U.S. after 1993 must not exceed one gallon per flush, by law.

Buyer Tips

Infrared or ultrasound sensors can help avoid water waste attributable to double flushing. Siphonic jet and blowout urinals, which flush automatically at given intervals, can be configured with timers or sensors that avoid automatic flushing during unoccupied hours.

Retrofitting an existing urinal with a water-conserving valve can save substantially on water use at little cost.

Technology Options

For specialized situations like prisons or hospitals, non-ceramic, metal urinals are available which have straight drain lines and a 0.5 gpf rate. Replacing an existing 3.0 gpf with a 0.5 gpf urinal can produce very large lifetime water savings, especially where water costs are high.

Waterless urinals offer enormous water cost savings. A waterless urinal uses a chemical trap with a low specific gravity chemical. This allows waste to flow down the discharge pipe without permitting sewer gases to escape. Daily maintenance cleaning of these urinals is important for odor control. Costs of chemicals and traps need to be compared with water cost savings.

Early replacement of high flush rate urinals can produce water cost-savings of several hundred dollars, as shown in the following tables.

Urinal Cost-Effectiveness Example A – Average Water Costs

Performance	Typical Existing Unit	New Unit[a]	Best Available
Gallons per flush (gpf)	3.0 gpf	1.0 gpf	0.0 gpf
Annual Water Use	23,400 gallons	7,800 gallons	0 gallons
Annual Water Cost	$90	$30	$0
10-year Water Cost	$800	$250	$0
Lifetime Water Cost Savings (for replacing existing unit 10 years early)	–	**$550**	**$800**

a) The flush rate of the new unit meets the current federal standards for urinals.

Cost-Effectiveness Assumptions

Savings estimates are based on the flush rate for an existing unit of 3.0 gpf. Urinal use is assumed to be 30 flushes per day, and 260 days per year. The water price is assumed to be $4/1,000 gallons (supply + wastewater treatment).

Understanding the Cost-Effectiveness Table

In the example shown above, early replacement of the existing urinal with a new unit at the recommended flush rate of 1.0 gpf will save $550 in water costs over a 10-year period (the time before the old fixture will be replaced). Likewise, the Best Available model, a waterless urinal, will save $800 in water costs over a 10-year period. The example assumes that no water is lost through leakage in either of the water-using models.

What if my Water Price is different?

To adjust the Lifetime Water Cost Savings in the table above for a different water price, multiply the $550 figure listed by this ratio: $\left(\frac{\textit{Your price in \$/1,000 gallons}}{\textit{\$4.00/1,000 gallons}}\right)$. In many areas of the country, water costs dramatically exceed the average, deeming early urinal replacement particularly cost-effective. In the example below, water cost is assumed to be $10/1,000 gallons.

Urinal Cost-Effectiveness Example B – High Water Costs

Performance	Typical Existing Unit	New Unit[a]	Best Available
Gallons per flush (gpf)	3.0 gpf	1.0 gpf	0.0 gpf
Annual Water Use	23,400 gallons	7,800 gallons	0 gallons
Annual Water Cost	$230	$80	$0
10-year Water Cost	$1,950	$650	$0
Lifetime Water Cost Savings (for replacing existing unit 10 years early)	–	**$1,300**	**$1,950**

a) The flush rate of the new unit meets the current federal standards for urinals.

Early Replacement

Definition

The 10-year Water Cost is the sum of the discounted value of annual water costs, based on average usage and an assumption that early replacement of the urinal occurs at the midpoint of a 20-yr. useful life. A discount rate of 4.1% is based on federal guidelines (effective from April, 2000 to March, 2001). Future water and wastewater treatment costs are conservatively assumed to increase only at the rate of inflation.

Metric Conversion

1 gallon = 3.8 liters

FEMP FEDERAL ENERGY MANAGEMENT PROGRAM